

DECLARATION FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Bamboo Fibre and its Manufacture

the specification of which is attached hereto unless the following box is checked:

☒ was filed on 04/03/2003 as United States Application Number or PCT International Application Number PCT/CN03/00234 and was amended on _____ (if applicable),

with US application no.: 10/510,877.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56.

I hereby claim foreign priority benefits under 35 USC 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

PCT/CN03/00234

(Number)

PCT

(Country)

03/04/2003

(Day/Month/Year Filed)

Priority Claimed

☒ Yes ☐ No

02111380.7

(Number)

China

(Country)

10/04/2002

(Day/Month/Year Filed)

☒ Yes ☐ No

☐ Yes ☐ No

(Number)

(Country)

(Day/Month/Year Filed)

I hereby claimed the benefit under 35 USC 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of 35 USC 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

PCT/CN03/00234

(Application Number)

03/04/2003

(Filing Date)

pending

(Status-patented, pending, abandoned)

(Application Number)

(Filing Date)

(Status-patented, pending, abandoned)

I hereby appoint the following attorney(s) and/or agent(s), with full powers of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

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I hereby declare that all Statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor (given name, family name) Zhao Ziqun

Inventor's signature 赵子群

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Date 2004-10-5

Citizenship China

Full name of second joint inventor, if any (given name, family name) _____

Second Inventor's signature _____

Residence _____

Post Office Address _____

Date _____

Citizenship _____

☐ Additional inventors are being named on separately numbered sheets attached hereto.

附图说明

图 1 为本发明工序流程图。

具体实施方式

下面结合附图对本发明作进一步描述：

实施例 1：

- (1)整料工序：将原料竹去枝节、去尖梢、锯成定长竹筒；
- (2)制竹片工序：用撞竹机或手工将竹筒劈成 2 厘米左右宽度；
- (3)浸泡工序：将竹片浸泡在特制的脱胶软化剂浸泡液中，脱胶软化剂和水的配比浓度为 30%，浸泡时间 4 小时，该脱胶软化剂为天然植物配方，不含酸碱化学剂；
- (4)一蒸煮工序：把上工序浸泡过的竹片连同浸泡液一起在蒸煮锅中加温到 150℃，同时加压 5 公斤/平方厘米，时间 3 小时，进行脱糖、脱脂、杀菌；
- (5)一水洗工序：把蒸煮过的竹片取出，用水洗净表面浸泡液；
- (6)一分丝工序：用机器压扁竹片，后用成丝机分解出粗纤维，并用水冲洗脱胶；
- (7)二蒸煮工序：把竹纤维放入蒸煮锅中，加入浸泡液中，加温 120℃，加压 4 公斤/平方厘米，时间 4 小时；
- (8)二水洗工序：同(6)工序；
- (9)二分丝工序：将竹纤维继续分解成较细纤维，并用水冲洗脱胶；
- (10) 三蒸煮工序：把竹纤维放入蒸煮锅中，加入浸泡液中，加温 100℃，加压 3 公斤/平方厘米，时间 5 小时；
- (11) 三水洗工序：同(6)工序；
- (12) 三分丝工序：同(10)工序；
- (13) 四蒸煮工序：在浸泡液中加入漂白粉，其余要求同(10)工序；
- (14) 四分丝工序：用手工将竹纤维继续分解到细度 1687 公支左右，长度为原自然节长度；
- (15)还原工序：把竹纤维放入浸泡液中，加入适量添加剂，以增加竹纤维强度；
- (16)脱水工序：用离心真空泵把竹纤维中的水份脱除，(普通脱水法)；

(17)软化工序：用普通软化剂把竹纤维进一步软化到麻等植物的柔软度；

(18)干燥工序：用专用烘干机将纤维干燥，温度 80-120℃，时间 30 分钟，使含水率低于 10%；

(19)梳纤工序：用梳纤机将竹纤维梳制、整理成竹纤维丝；

(20)筛选检验工序：将干燥的竹纤维丝进行筛选，去掉短纤维及竹粉末，竹纤维丝占总量的 95%以上，经检验合格包装，即成工业面料用竹纤维产品。

依据 GB/ T6100 - 1985 与 GB/ T13783 - 1992 测试标准，对本发明竹纤维与优质棉对比检验，检测结果为：竹纤维线密度为：544mtex，棉纤维线密度为：167mtex；竹纤维断裂比强度为：37.4 cN/tex，棉纤维断裂比强度为：20.2cN/tex；竹纤维断裂伸长率为：4.1%，棉纤维断裂伸长率为：8.1%。竹纤维属于纤维素纤维。

实施例 2:

在实施例 1 中将工序（4）中的温度改成 80℃，加压 3 公斤/平方厘米，时间 5 小时，其余工序同实施例 1。

用本发明的竹纤维，适合绢纺、麻纺、棉纺，也可用以上纤维混纺，最细的纯竹纤维可纺 48 英支的纱线，混纺可纺 80 英支以上的纱线。其柔软度、强度和贴身感不亚于任何一种其他面料，而其本身所带毛竹的天然特征如：凉爽、防暑、透气性、抗紫外线功能，大大优于普通面料，尤其是成本低廉，取材方便，清洗容易、晾干快。

权利要求书

1. 一种用作服装面料的竹纤维，其特征是：平均细度为 1000 - 3000 公支，长度如竹节的自然长度，不含化学试剂纯天然竹纤维。
2. 一种用作服装面料的竹纤维制造方法，由竹原料前处理工序、竹纤维分解工序、竹纤维成型工序和竹纤维后处理工序组成，其特征是：竹纤维前处理工序依次由整料、制竹片、浸泡工序组成；竹纤维分解工序依次由蒸煮、水洗、分丝各工序循环三次组成；竹纤维成型工序依次由蒸煮、分丝、还原、脱水、软化工序组成；竹纤维后处理工序依次由干燥、梳纤、筛选和检验工序组成。
3. 根据权利要求 2 所述的竹纤维制造方法，其特征在于：所述竹片浸泡工序是将经过前处理工序的竹片浸泡在脱胶软化剂中，脱胶软化剂和水的配比为浓度为 30%，浸泡时间 4 小时；蒸煮工序是将浸泡过的竹片连同浸泡液一起加温到 80 - 150℃，同时加压 3 - 5 公斤/平方厘米，时间 3 - 5 小时；分丝工序是把蒸煮过的竹片压扁后用成丝机分解出竹纤维，并用水冲洗脱胶；还原工序是在经过竹纤维分解工序的竹纤维中加入添加剂以增加纤维强度；软化工序是用普通软化剂将经前面工序处理的竹纤维进一步软化。
4. 根据权利要求 3 所述的竹纤维制造方法，其特征在于：所述的脱胶软化剂为天然植物配方，酸碱度为中性。

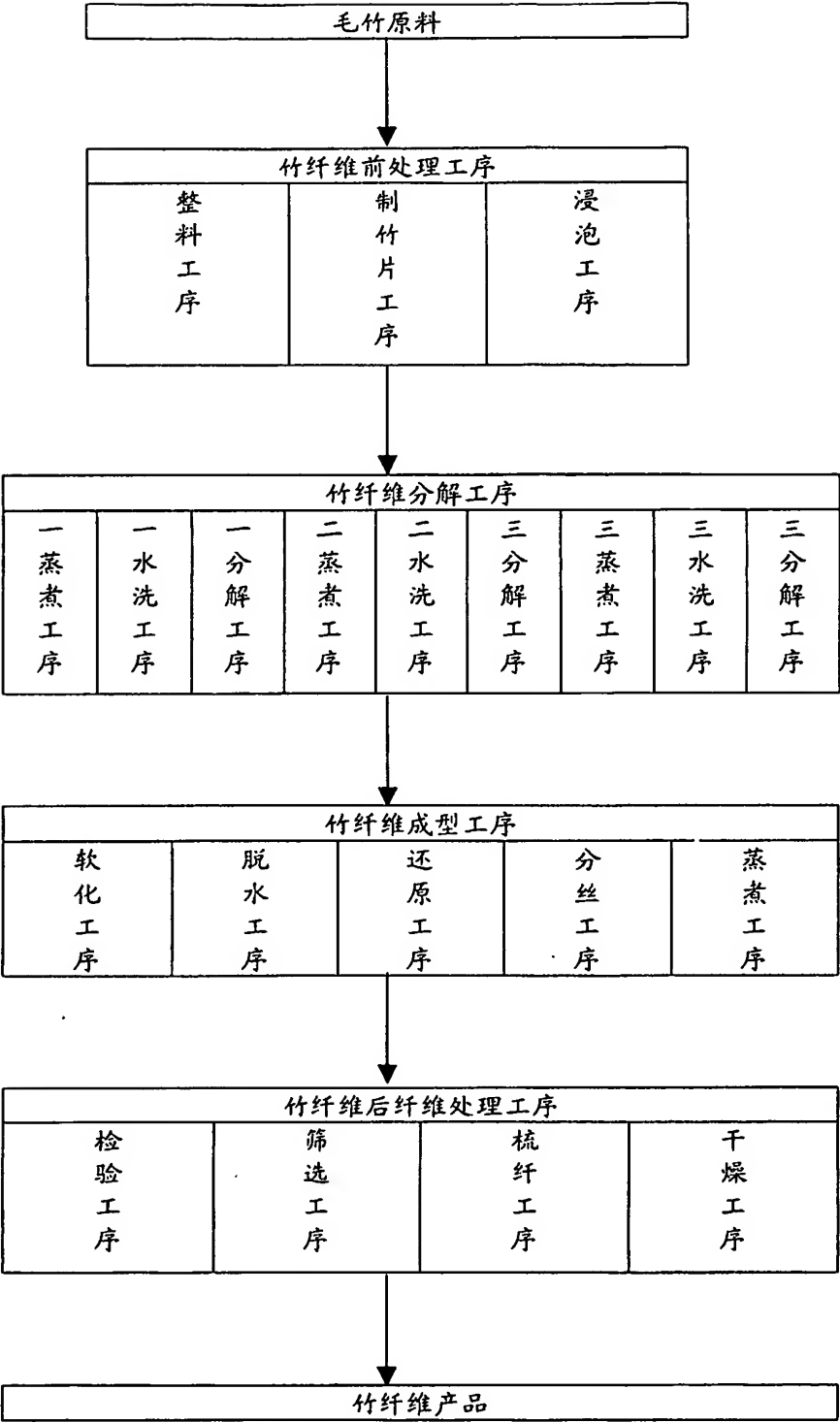


图 1

510, 877

(12) 按 专利合作条约所公布的国际 请

(19) 世界知识产权组织
国际局



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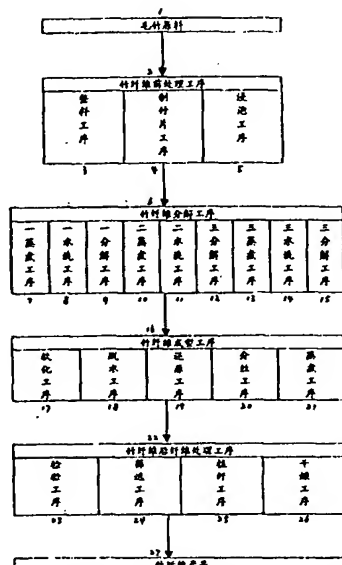
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本国际公布:
— 包括国际检索报告。

所引用双字母代码和其它缩写符号, 请参考刊登在每期 PCT公报期刊起始的“代码及缩写符号简要说明”。

(54) Title: BAMBOO FIBRE AND ITS MANUFACTURE

(54) 发明名称: 竹纤维及其制造方法



- 1...BAMBOO MATERIAL
- 2...PRETREATMENT PROCESSES
- 3...MATERIAL-SHAVING
- 4...BAMBOO STRIP-MAKING
- 5...STEERING
- 6...SEPARATION OF BAMBOO FIBER
- 7...FIRST COOKING
- 8...FIRST RINSING
- 9...FIRST SEPARATING
- 10...SECOND COOKING
- 11...SECOND RINSING
- 12...SECOND SEPARATING
- 13...THIRD COOKING
- 14...THIRD RINSING
- 15...THIRD SEPARATING
- 16...FORMING OF BAMBOO FIBRE
- 17...SOFTENING
- 18...DEWATERING
- 19...RESTORING
- 20...SEPARATING
- 21...COOKING
- 22...POSTTREATMENT OF BAMBOO FIBRE
- 23...INSPECTING
- 24...SIFTING
- 25...FIBRE CARDING
- 26...DRYING
- 27...PRODUCT OF BAMBOO FIBRE

(57) Abstract: The present invention is related to a bamboo fibre, which uses fasciate bamboo as raw material, and is 1000-3000 metric counts. The invention is aimed at providing a kind of raw material for making face fabric instead of cotton, chemical fibre, hemp and silk, and the production method of this kind of fibre includes the procedures of bamboo pretreatment, bamboo decomposition, bamboo fibre forming and its after treatment, in which it adopts a degumming softening agent made up according to a wild plant formula, it is neutral in acidity-alkalinity and has no environmental pollution. The face fabric made of bamboo fibre is good in flexibility, permeability and is UV-resistant, low cost and high comfort in summer.

[见续页]



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(57) 摘要

本发明是以簇生竹为原料，制取平均细度为 1000 - 3000 公支的毛竹纤维制造技术。目的是提供一种能替代棉花、化纤、麻、丝的服装面料原料。制造法由竹纤维前处理、竹纤维分解工序、竹纤维成型工序和竹纤维后处理等工序组成，其中所采用的脱胶软化剂为天然植物配方，酸碱度为中性，无环境污染。由本发明生产的竹纤维服装面料柔韧性好，透气性强，抗紫外线，有天然毛竹特有的清凉、防暑效果，是一种价廉物美，性能价格比优越的新一代服装面料。